

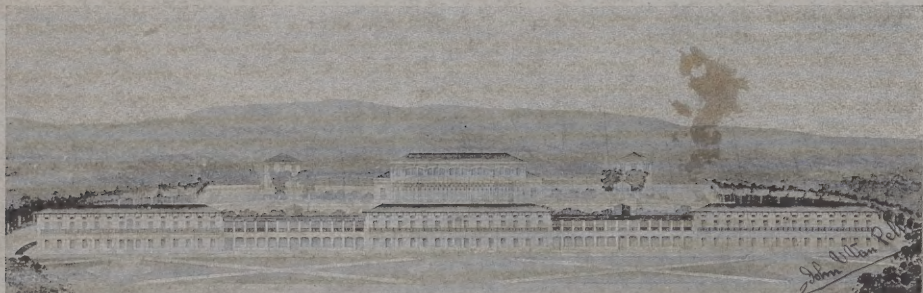
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THE HYGIENIC, EDUCATIONAL, AND SYMPTOMATIC
TREATMENT OF

PULMONARY TUBERCULOSIS

With a Plea for Sanatoriums for the Poor



BY

S. A. KNOFF, M.D., PARIS AND BELL., N. Y.

NEW YORK

Former Assistant to Professor Dettweiler, Falkenstein Sanatorium, Germany; Fellow of the New York Academy of Medicine; Lauréat de l'Académie de Médecine de Paris; Membre de la Société de Médecine Publique et d'Hygiène Professionnelle; Member of the Pennsylvania Society for the Prevention of Tuberculosis, etc.

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THE HYGIENIC, EDUCATIONAL,
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TREATMENT OF PULMONARY TUBERCULOSIS,
WITH A PLEA FOR SANATORIUMS
FOR THE POOR.¹

BY

S. A. KNOPF, M.D. PARIS, AND BELL. N. Y.,

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FORMER ASSISTANT TO PROFESSOR DETTWEILER, FALKENSTEIN SANATORIUM,
GERMANY; FELLOW OF THE NEW YORK ACADEMY OF MEDICINE; LAUR-
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DE MÉDECINE PUBLIQUE ET D'HYGIÈNE PROFESSIONNELLE; MEMBER OF
THE PENNSYLVANIA SOCIETY FOR THE PREVENTION OF TUBERCULOSIS,
ETC.

IN presenting to you a paper under this title I do not pretend to offer any new treatment, but simply wish to summarize the best of what I have seen and learned during a number of years devoted to the study of the treatment of pulmonary tuberculosis, in American and European sanatoriums and health resorts. I will add to this a few remarks on recent experiments with Marmoreck's antistreptococcic serum as an agent in the symptomatic treatment of this disease.

Individual prophylaxis, diet, and education, which form the most important part of the hygienic treatment of consumptives, can, I believe in the majority of cases, be best carried out in the "closed establishment"—that is, in the sanatorium, where the patient is under constant medical supervision.

The first question which naturally arises is: Where should such a sanatorium be situated? It should be

Location of
Sanatorium.

¹ Read before the New York Academy of Medicine, January 21, 1897.

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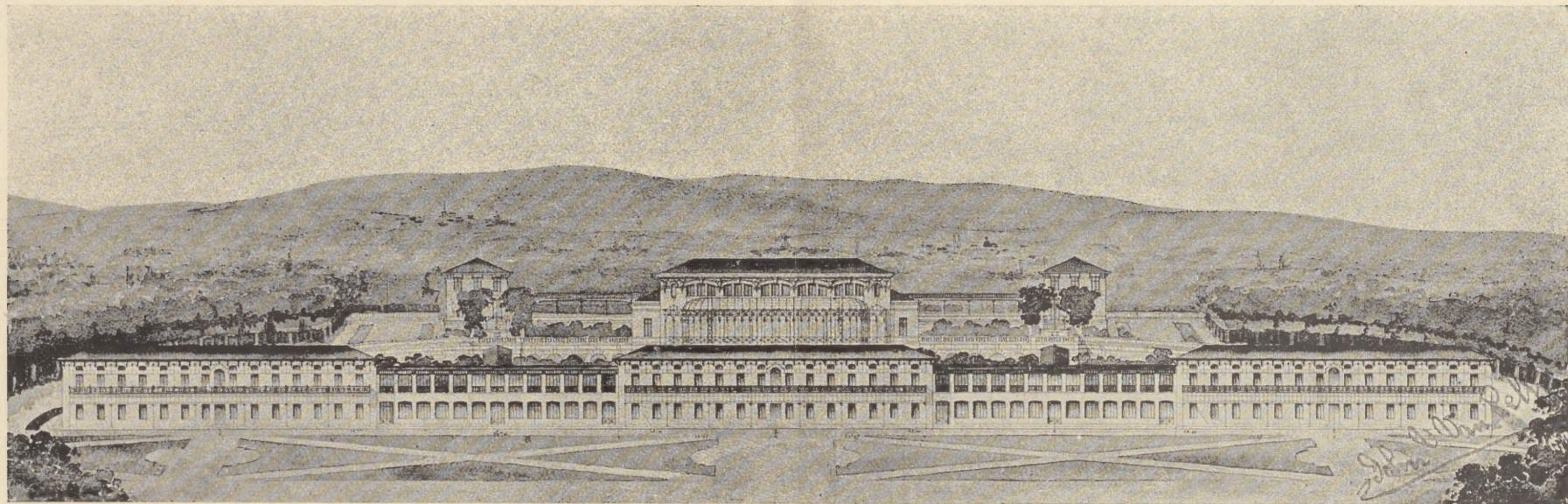
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where it can do the most good to the largest number. I do not believe in the specific curative quality of any climate, but I do believe very strongly that it is essential to the majority of tuberculous patients to be treated and cured in the same climate where they will have to live and work after their restoration to health. I would therefore place the sanatorium for consumptives within easy reach of a large centre of population, at no greater distance than three to five hours by rail. It should be in a region known for its relative purity of atmosphere, where there is freedom from all miasmatic and malarial influences, and where the pathogenic microbes are found only in negligible quantities. If possible, it should be where the extremes of temperature are not too pronounced, and, if the region is a mountainous one, at an altitude of from one thousand to fifteen hundred feet. The site should be a pleasant one, with a southern exposure, and protected from the cold winds by higher mountains or woodlands.

Choice of Buildings.

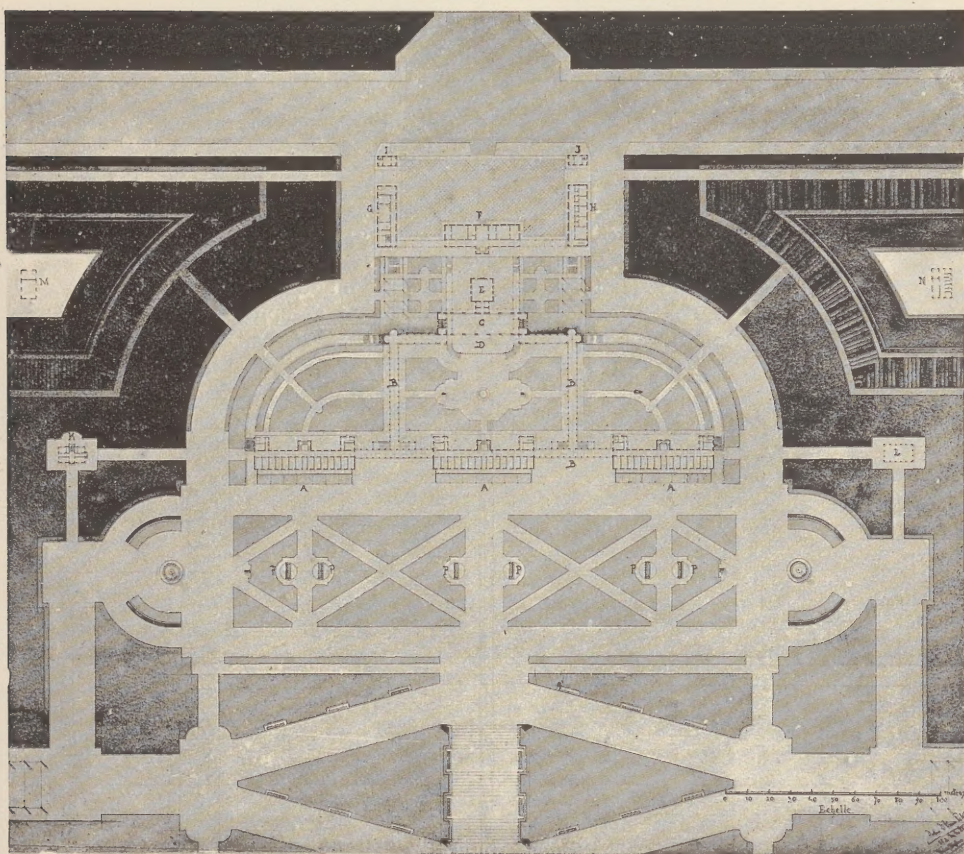
The next question is: What kind of buildings should be selected for such an institution? The European system, under which they house as many as seventy-five to one hundred patients under one roof, or the American cottage system, with no more than four to eight in each cottage? To make so large an aggregation as one finds in some of the European institutions seems certainly not a good plan, since the hygienic measures are almost sure to suffer in such a house. On the other hand the cottage system, while it may be the ideal for some diseases, is, on the whole, not the most desirable as a sanatorium for consumptives. The constant medical supervision, one of the most important features in the sanatorium treatment, can hardly be carried out in a village of twenty or thirty small cottages several hundred feet apart, not to mention the increased expense which such a system involves. After having visited and studied some thirty odd institutions in this country and abroad, I endeavored in my French thesis on this subject¹ to illustrate what would seem, at least to me, an ideal sanatorium for the treatment of patients suffering from pulmonary tuberculosis. It was designed by my friend, Mr. Van Pelt, of the École des Beaux Arts in Paris. I have adopted a plan between the European and the American, in other words, the large pavilion system. Three two-story pavilions, each accommodating twenty-five patients, are united

¹ "Les Sanatoria: Traitement et Prophylaxie de la Phtisie Pulmonaire," par le Dr. S. A. Knopf (Paris, Geo. Carré, éditeur).



PERSPECTIVE VIEW OF A SANATORIUM FOR CONSUMPTIVES, LARGE PAVILION SYSTEM.

by covered galleries one hundred feet long, which serve on rainy days as promenades. Behind the middle pavilion are situated the dining-room, kitchen, administration building, winter garden, etc., all united by galleries. At some distance from the main structures are a recreation pavilion, a house for visitors, and a place for isolation. Each main pavilion is about one hundred and thirty-five feet long, has twenty-five large well-ventilated rooms, also bathrooms, sitting-rooms, and parlors. In the basement are the hydrotherapeutic appliances. In front of each pavilion,



PLAN OF THE SANATORIUM.

A, Pavilion for patients.
B, Galleries uniting the pavilions.
C, Dining-hall.
D, Winter garden.
E, Kitchen.

F, Administration building.
G, Physician's house.
H, House for visitors.
I, J, Janitor and gardener.
K, House for isolation.

L, Recreation pavilion.
M, Disinfecting room.
N, Stables.
P, Turning pavilions.

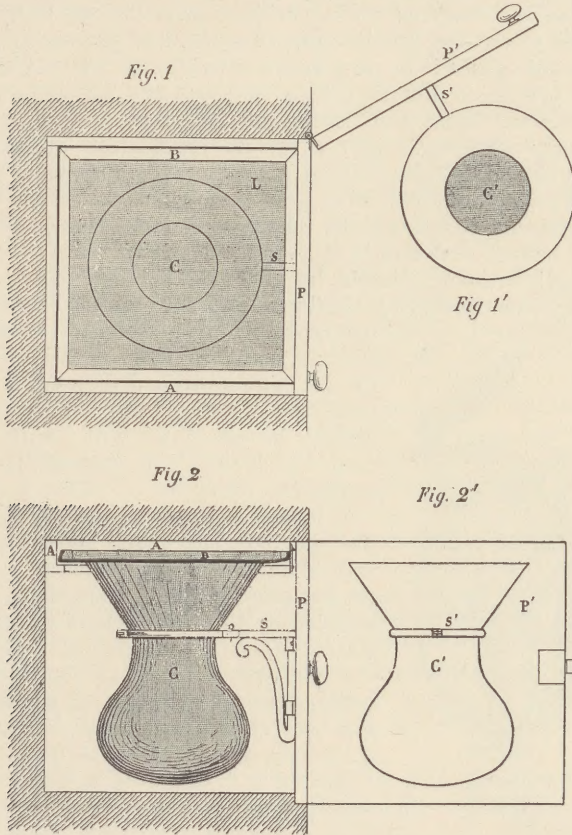
along its entire length, is a veranda twelve feet wide, where the patients take their rest cure on their comfortable steamer chairs or lounges. Besides the ordinary hygienic precautions in regard to plumbing, heating, water supply, etc., all angles throughout the house are rounded, to prevent the accumulation of dust. The walls are painted, that they may be easily disinfected; the floors are of hard wood, that they may be easily mopped, as sweeping or raising dust is absolutely forbidden in a well-conducted sanatorium.

**Prophylactic
Measures Con-
cerning Ex-
pectoration.**

One of the main features in regard to individual prophylaxis is the care taken with the expectoration and other secretions which might contain the bacilli. At the admission of the patient he is instructed that to expectorate anywhere except in a proper receptacle means danger to him and danger to others, for he may reinfect himself and communicate the disease to any number of other persons through the inhalation of the germs contained in the dried particles of his sputum carelessly deposited here and there.

Of course it is the duty of the administration of the sanatorium to see that a violation of the rules concerning the prophylactic measures is made impossible. Thus, there should be the proper kind of spittoons, a sufficient number of them, and a thorough destruction of the expectorated matter. But this should be done as unostentatiously as possible, for to see a countless number of all sorts of spittoons in various degrees of cleanliness is certainly not a pleasant sight for either patient or visitor. In my opinion, all spittoons standing on the ground should be done away with in a sanatorium, for while I am willing to concede to a certain portion of our American male population a wonderful dexterity in disposing of their buccal secretion, in the pure state or modified by the weed, I have yet to find a woman or young miss who knows how to hit the spittoon. Where much expectoration is going on one usually finds the brims of spittoons that are placed on the floor covered with dried sputum, and even the piece of oilcloth placed underneath as a precautionary measure often shows signs of the inexperienced spitter. To obviate these difficulties I have devised an arrangement of elevated spittoons, visible only when in use. In the walls of parlors, halls, and galleries, at appropriate distances, are placed small niches or cupboards three or three and a half feet from the floor. They are large enough to hold a spittoon eight inches high and about the same diameter, which is made of earthenware or colored glass, that its contents

may be less visible, and is supported by a metal ring attached to the door of the cupboard. The patient desiring to expectorate opens the little door, thus bringing the spittoon within reach, and closes it again



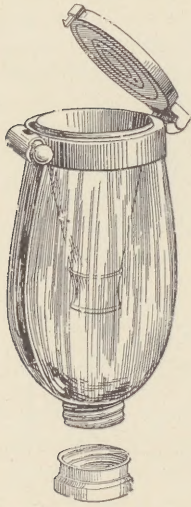
Spittoon, elevated 3 ft. or 3 ft. 6 in. from the floor, and inclosed in the wall. P, door; S, hinged support; C, spittoon; B, cover. Figs. 1 and 1', plan; 2 and 2', elevation; Figs. 1 and 2 represent the door closed; 1' and 2' represent the door open.

when he gets through. In the grounds the niches may be replaced by boxes mounted on stands. For the bedroom and the veranda, where the patient is taking his rest cure, the little covered white porcelain cups suffice.

Another prophylactic measure is the pocket spittoon, which the patient should always have with him to use when he cannot conveniently get at the others.

One of the best of these is certainly the one devised by Geheimrath Dettweiler. It is a pocket flask about four inches long and six inches in its largest circumference. It is provided with a hermetically closing top and bottom, and is so constructed as to be easily cleaned. The touch of a spring causes the top to fly open to receive the intended deposit, and pressure of the lid causes it to close again with a snap. It would be perfection but that it is of glass and breakable, somewhat large and heavy, and its sharp protruding spring protector might cause an inoculation of the thumb. All these trifling disadvantages I believe I have overcome by having a spittoon made entirely of aluminum which weighs only three ounces instead of six ounces with nearly the same cubical contents.

All spittoons should be covered when not in use. The experiment of Spillman and Haushalter¹ have demonstrated beyond doubt the dissemination of the bacilli by flies. Patients in bed too weak to make use of the ordinary hand cup should be provided with moist rags, which should be burned immediately after use.



Dettweiler's Pocket Spittoon.

The best method of destroying the bacilli and their possible spores in the sputa collected in vessels seems to be the one recommended by Professor Grancher, of Paris.² The spittoons with their contents are placed in boiling water, the temperature of which has been raised by the addition of carbonate of sodium. The person intrusted with this work should be provided with strong rubber gloves, to guard against possible inoculation.

Since the saliva of tuberculous patients not infrequently contains the bacilli, it is well to rinse the napkins in boiling water after each meal, or if for economical reasons this is impracticable, Japanese paper napkins may be substituted, which are to be burned after use. Knives, forks, spoons, glasses, etc.,

Concerning Saliva.

¹ Spillman et Haushalter : "Dissémination du Bacille de la Tuberculose par les Mouches," *Comptes rendus de l'Académie des Sciences*.

² Grancher : "Maladies de l'Appareil Respiratoire. Tuberculose et Auscultation." Paris, Octave Doin, éditeur.

should also be washed in boiling water or sterilized after each use. The occasionally infectious nature of the saliva should also be a warning to consumptives never to kiss any one on the mouth. Patients should be taught not to use one handkerchief indiscriminately for the nose and wiping the mouth after expectoration. One should be kept in the pocket with the little flask to be used for the latter purpose. This may seem a superfluous precaution, and still I think the rather frequent coexistence of pharyngeal and laryngeal tuberculosis with relatively few advanced pulmonary lesions may well be explained by this mode of secondary infection, especially when we consider that the bactericidal quality of the healthy nasal secretion is probably always lacking in the tuberculous individual.

Consumptives should dress warmly, but not be so bundled up as to hinder their movements or make them perspire at the slightest exertion. Ladies will do well to adopt the Jenness-Miller system of dress reform, which does away with tight lacing and long and heavy skirts, thus facilitating abdominal breathing and freeing the viscera from the pressure caused by the usual mode of dress. Warm and dry footwear is essential. On very cold days the patients, while taking their rest cure, should be provided with hot-water bags or hot soapstones, to keep their feet warm. Under symptomatic treatment we must first direct our attention to combating the physiological poverty, the most striking symptom in pulmonary tuberculosis. This we endeavor to do by aerotherapeutics, good food and plenty of it, hydrotherapeutics, massage, and finally by medicinal substances to help build up the system, such as cod-liver oil, phosphates, strychnine, iron, creosote, bitter tonics, etc.

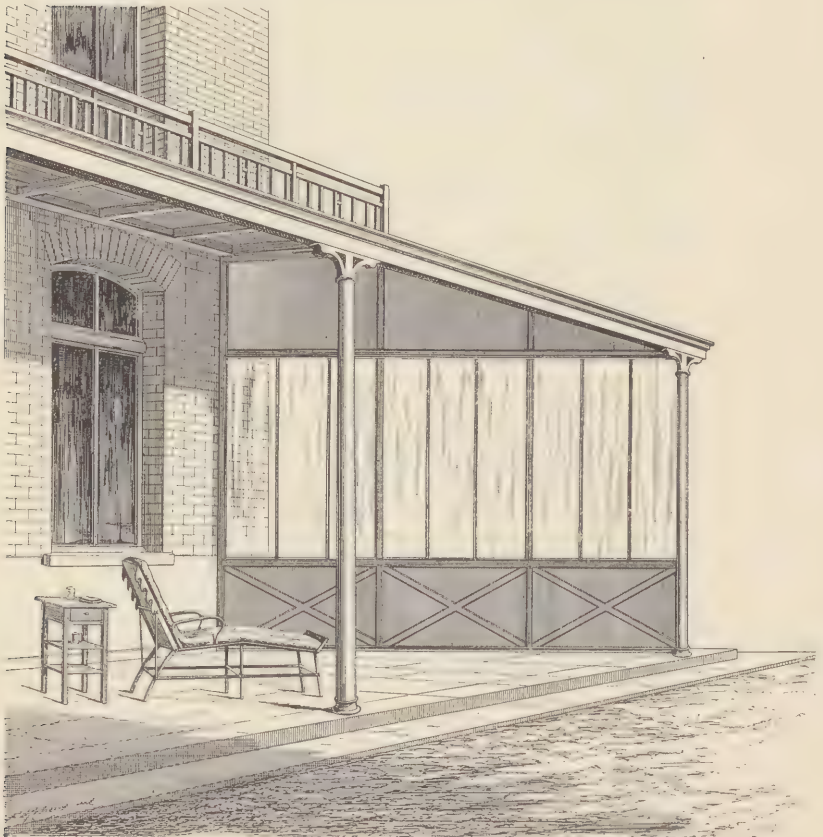
By aerotherapeutics is meant the gradual exposure of the patient to the open air until he virtually lives in the fresh air, winter or summer, rain or shine. This is what the Germans call the "Dauerluftkur." The patient is placed on the veranda, comfortably wrapped up on his lounge or steamer chair, in a position to admit of a complete muscular relaxation. Every half-hour or so he rises to take his breathing-exercises. I am willing to acknowledge that I think them of much greater importance than do the majority of phthisio-therapists. It is true that whenever there are old pleuritic adhesions these strong respiratory movements may become painful, owing to the tearing of some fibrinous bands, but this is salutary and not lasting. The respiratory muscles become developed,

How Consumptives should Dress.

Physiological Poverty.

Aerotherapeutics.

the increased pulmonary function makes the process of hæmatosis more complete, and helps to dissolve the mucus and aid in expectoration. This is the little system of exercises I have adopted: The patient, who is taught always to breathe through the nose, takes a deep inspiration slowly, while raising the arms from the sides to a horizontal position, holds the breath for a moment, and lowers the arms during the expiration, which should be somewhat more rapid. The second exercise is like the first, except that the upward movement of the arms is continued until they meet above the head. In the third exercise the patient stretches his arms out as in the position of swimming, the dorsal surfaces of the hands touching each other. During the inspiration the arms are moved outward and



Corner of Veranda with Adjustable Chair for Rest Cure.

finally meet behind the back. They are brought forward again during the expiration. Each respiratory act should be followed immediately by a secondary forced expiratory effort. This is for the purpose of expelling as much of the supplemental air as possible, and may be effectually aided by supinating the arms and pressing the thorax with them. The feebler patients must content themselves with breathing-exercises at rarer intervals and without rising from the bed or couch, and of course without moving the arms. Patients able to walk alternate their rest cure and breathing-exercises with graduated promenades, that is to say, walks on paths varying in inclination from one foot in three hundred to one foot in sixty feet.

Patients are taught never to hurry, always to stop before getting tired, and never to exercise to the extent of perspiring. Should they at any time have neglected this precaution and perspire profusely, they should at once return to the house, be rubbed off, and go to bed. While out of doors on cold or windy days consumptives should keep their mouths closed, and talk as little as possible. These precautions are essential to protect the patient from colds, which are always to be dreaded in consumption. In the recreation pavilion, parlor, library, or anywhere else, the air must always be kept fresh and pure. Of course the patients always sleep with an open window, wide open in summer and partly so in winter or on stormy days. But, however intelligent the patient may be, none of these measures must ever be left to his caprice; everything—rest cure, breathing-exercises, walks, even how far the window should be open—must be regulated by the attending physician.

Hydrotherapeutics, beneficial and indispensable as they are, must be applied most judiciously. The patient is educated up to the classic douche by preparing his skin first by dry friction only. Later the patient is rubbed for a time with alcohol, then with equal parts of alcohol and water, then with water alone, and finally he receives the affusions or douches according to indication. Lateral weak douches or affusions may be advantageously applied to loosen old pleuritic adhesions. It goes without saying that the douche apparatus is always manipulated by the medical attendant.

The diet of tuberculous patients should be varied and abundant, and their meals served regularly and in an appetizing manner. They should be urged to eat, and it should be impressed upon them that their di-

Precautions.

Hydrotherapeutics.

Diet and Treatment of Digestive Disorders.

gestive powers are far greater than their appetite indicates. They may have no desire for food whatsoever, and yet they can eat and assimilate a good deal. Every consumptive must be told that upon his willingness to eat depends his salvation. Feverish patients should eat when their temperature is lowest. Milk from tested cows, butter, cream, should be taken in large quantities. The only precaution necessary is to take the milk in small sips, and as many as eight or ten glasses may be taken per day. The patient's teeth should be kept in good condition; he should eat slowly and chew his food well. Any indigestion should be reported to the doctor at once. For constipation an increased proportion of fruit often suffices; if not, abdominal massage or cascara or some other mild laxative may be resorted to. Diarrhœa, if not due to tuberculous lesions, should be treated by first cleansing the intestinal canal and then giving appropriate diet, such as rice, eggs, toast, cocoa, mucilaginous soups, Bordeaux with arrowroot. If of tuberculous origin, the usual treatment by opiates and astringents in connection with intestinal antisepsis must of course be pursued.

Cough.

Painful coughs seem best relieved by codeine solutions; but cough as a matter of habit, when there is nothing to expectorate, should be suppressed by discipline. Dettweiler tells his patients that to cough in public without cause is scratching the throat because it tickles, and that it is as ill-mannered as scratching one's head in public when it itches. On the other hand, I think it just as essential to warn the patient never out of false delicacy to swallow his expectoration and thus infect his intestinal tract. Sips of cold milk will help to overcome tickling sensations in the throat until the patient has fully become master of his cough.

Hemorrhages.

Hæmoptysis is treated in sanatoriums as anywhere else—absolute rest in a half-sitting posture, ice bags over heart and apices, ligation of upper and lower limbs, morphine, ergotine, etc. The physician will of course assure the patient that he need not be alarmed, as hemorrhages are ordinary phases of the disease, not necessarily lessening the chances of recovery. Timid patients who have never had hemorrhages should even be warned that this may occur.

Night Sweats.

To combat night sweats the patient is given a glass of cold milk with one or two teaspoonfuls of cognac just before retiring. In cases in which this and even the atropine, agaricin, etc., failed, I have often suc-

ceeded by applying a wet pack in the form of a shawl over chest and apices.

Counter-irritants are to my mind valuable adjuvants. They draw from the delicate lung structure countless dangerous micro-organisms into the less delicate cellular tissue, where by the action of the counter-irritant the number of the phagocytic white corpuscles has been increased; and thus an actual destruction of pathogenic microbes is brought about by the simple mustard plaster, the old-fashioned dry cups, or the *points de feu* (ignipuncture).

One of the most surprising things to me which I noticed in my studies of the sanatorium treatment, especially in institutions situated in higher altitudes, was the almost total cessation of the fever of many of the newly arrived consumptives after a few days, without the administration of any antipyretic whatsoever. The only explanation to me was the almost total absence of pathogenic microbes, especially the streptococci, in these higher altitudes, and consequently a cessation of the association of microbes. This conclusion led me to my experiments with Marmoreck's antistreptococcic serum.¹ I wrote to the Pasteur Institute, and received my first lot of serum last June. Through the courtesy of my distinguished teacher, Professor Biggs, I was first allowed to test the antistreptococcic action in our city laboratory by a series of experiments on animals. These experiments were satisfactory enough to justify the employment of the serum in the human species. I will rapidly summarize the results I obtained, speaking, of course, of consumptive cases only. The action of the serum was not always uniform. With patients whose temperature rose over 102° F. for several days, I did not obtain any results. When, however, there was a temperature of only 101° F., or a trifle over, with streptococci in the sputum, a first injection of ten cubic centimetres reduced the temperature from one to one and a half degrees. A second of ten cubic centimetres brought it down to nearly normal. A third, fourth, fifth, and sixth of five cubic centimetres each, given first every twenty-four hours, then at longer intervals, helped to maintain the normal or nearly normal temperature, and a general better feeling was experienced by the patient.

Dr. Weaver claims still better results.² Among

¹ Marmoreck: "Le Streptocoque et le Sérum Antistreptococcique," *Annales de l'Institut Pasteur*, July, 1895.

² Weaver, W. H.: "Antistreptococcus Serum in the Treatment of Consumption."

Counter-irritants.

Experiments with Anti-streptococcic Serum.

other cases he reported one in the *Journal of the American Medical Association* of September 5th, with a temperature of 105° F., which he brought down to nearly normal with a single dose, and maintained it there by repeating the injection every second day. However, I think it will require much more experimentation to fix the real value of this serum. Its action seems to depend not only upon the make of serum used,¹ but also upon the degree of virulence of the toxins produced by the streptococci in the system. The earlier the injections are made the better seem the results. I should like to encourage its use in pulmonary tuberculosis whenever there is a mixed infection, and when after a short trial absolute rest, fresh air, and the usual antipyretics have failed.

State of Mind.

The mind of a consumptive should be treated as well as his body. He must not have time to think of anything but getting well. At all hours of the day he must have something to do with that purpose in view. At this hour his meals, at this his rest cure, at that his walks, at another his douches, etc. Cheerful reading, quiet games, occasional entertainments, or little lectures on hygiene should form the pleasant features of sanatorium life. Some consumptives are sanguine, some despondent, some irritable, and most of them imprudent—"Ein leichtsinniges Völkchen" ("a careless little lot of people"), as Dettweiler calls them. Much tact and forbearance, combined with a never failing firmness when occasion demands, are necessary to deal with them effectually.

Need of Sanatoriums for the Poor.

To say that these various phases of treatment just described can be carried out only in a sanatorium would be foolish. They can be carried out by any physician in private practice whose patient is willing, obedient, and so situated as to have all the comforts and the surroundings which the hygienic and dietetic treatment demands. But how many of these patients have we? Are not the majority of tuberculous patients poor? And is it not utterly impossible to treat them successfully in their unhygienic homes or even in our general hospitals? It is for these poor consumptives that I plead for the creation of sanatoriums.

To demonstrate the necessity of such special institutions allow me to picture to you in brief the life of a consumptive before and after his admission to one of our general hospitals.

¹ Merieux (Lyon) and Niemann (Berlin): "Ueber Antistreptokokken-Serum," *Berliner klinische Wochenschrift*, No. 49, December 7, 1896.

The honest laborer who has the misfortune to become tuberculous, and finally phthisical, will at the onset seek the advice of his family physician. Presuming that a correct diagnosis has been made, the physician is likely to prescribe, with the usual remedies just then in vogue, also a few weeks of rest. This, under the most favorable circumstances, means a consumption of part of the savings. After a while the patient, seemingly improved, resumes his former occupation. But the improvement is not lasting. He is again and again obliged to take a rest. The intervals between the periods of work become longer and longer. Instead of the physician the nearest dispensary is visited, for there has been too great a drain already on the little capital put aside during better days. At last, unable to work at all, he stays at home until he is forced to seek admission to one of the public hospitals.

Life of the
Average Poor
Consumptive.

A large number of our general hospitals supported by private charity absolutely refuse all patients suffering from tuberculosis, and it is but natural that the attending physicians of our general municipal hospitals should also avoid crowding their wards with tuberculous patients, especially if there is a likelihood of a very prolonged stay. Thus the consumptive often obtains admission with difficulty. Finally admitted, he is placed in one of the general wards. His neighbor to the right may have typhoid fever, the one to the left a pleurisy *à frigore*; opposite him may be a rheumatic or a fellow consumptive. If the physician in charge is in favor of medication, the patient will receive the latest remedies well spoken of in the treatment of tuberculosis. If the doctor is sceptical as to the value of medication in this disease, the patient may or may not receive the special diet, and the rest is left to nature. In the morning before the arrival of the visiting physician, the poor consumptive inhales the dust, and with it countless numbers of pathogenic microbes, raised by the attendant sweeping the ward with an ordinary broom instead of wiping the floor with a moist mop. If the patient has not yet his mixed infection he will soon get it. Instead of passing most of his time in the open air, the consumptive in our general hospitals is almost totally deprived of this essential factor in the proper treatment of his disease. Should he day or night ask to have a window open, his rheumatic neighbor would very strenuously object, for he could not stand the draught. Respiratory exercises are but rarely recommended, for the phy-

sician knows that they are useless in the ordinary hospital atmosphere. At meal times the consumptive patient eats but little. The frequent anorexia he cannot overcome, and even the special diet does not tempt him. The aerotherapeutic and hydrotherapeutic measures, so largely and beneficially resorted to in sanatoriums to overcome the loss of appetite, cannot be carried out in a general hospital. At night the patient sleeps but little. He is either kept awake by his own cough or that of his neighbor. The stuffy night atmosphere of the ward furthers still more his hyperidrosis. Thus he passes weeks, sometimes months, until a fatal determination ends his sufferings; for these patients rarely enter the hospital in time even to hope for a lasting amelioration. And during this time the family, deprived of its natural supporter, is most likely to have become a public charge.

Dangers of Infection.

And how does the presence of the consumptive in the general hospitals affect the other patients suffering from acute diseases? Leaving aside the depressing mental effect upon these patients, we know that it is next to impossible to have such thorough hygienic and prophylactic measures in a general hospital as are characteristic of the sanatorium. Is not the patient with his pleurisy *à frigore* in great danger of having his acute infection transformed into a chronic tuberculous one? And the typhoid-fever patient, with his greatly reduced power of resistance—may he not also become the prey of the bacillus tuberculosis ever present in our general hospitals?

Sanatoriums as Educators.

The medical and sanitary advantages which would be obtained by the creation of municipal sanatoriums for consumptives are evident, but these are not all. The patient with incipient phthisis, after a few months of practical training in the sanatorium, will have learned how to take care of his expectoration to avoid auto-infection or the communication of his disease to others. He will have learned how to avoid the causes which may aggravate his condition and acquired such hygienic habits as to have the best chance to become and remain entirely well.

But sanatoriums do not serve only as educators of individuals but as educators of communities as well. In the villages where the two largest German sanatoriums are situated, Goerbersdorf¹ and Falkenstein,² the mortality from tuberculosis has actually decreased

¹ Roempler: "Beiträge zur Lehre von der chronischen Lungenschwindsucht."

² Nahm: Münchener medic. Wochenschrift, No. 40, 1895.

among the village people, being now one-third less than before the establishment of those institutions. This, no doubt, is due to the example set by the inmates of the sanatoriums, and it is also the best proof that well-conducted sanatoriums for consumptives are not centres of infection, but, on the contrary, places where one is safest from contagion.¹

Experience abroad, where there are some sixty odd sanatoriums, half of them for the poor, already in operation or in course of construction,² has demonstrated that the running-expenses of a well-equipped sanatorium for consumptives are little or no greater than those of the general city hospitals; and statistics show that the same would be the case in New York. The daily expense per capita in the seven most important hospitals under the administration of the department of public charities and correction is as follows:

Expenses of Hospitals and Sanatoriums.

Fordham Hospital	\$2.0626 ³
Gouverneur Hospital.....	1.8399 ³
Harlem Hospital.....	1.6919 ³
Colored Home and Hospital.....	1.00 ⁴
Bellevue Hospital.....	0.7742 ³
Ward's Island Hospital.....	0.42 ⁴
City Hospital	0.3338 ⁴

This gives us an average of \$1.16 per day, and the daily average expense for each tuberculous patient at the Adirondack Cottage Sanatorium, one of the most successful institutions in this country, is only \$1.

The least favorable results obtained in sanatoriums devoted exclusively to the treatment of consumption are as follows:

Results in Sanatoriums.

14 per cent.	absolute cures;
14 " "	relative cures;
42 " "	ameliorations.

Thus, through the establishment of municipal institutions for the treatment of the curable tuberculous cases and for the isolation of the hopeless ones, the commonwealth would be the financial gainer in the end. Thousands of dollars are now expended for tuberculous patients in general hospitals, where, in spite of the best intentions on the part of the medical

Conclusions.

¹ Knopf: "Are Sanatoriums for Consumptives a Danger to the Neighborhood?" MEDICAL RECORD, October 3, 1896.

² Liebe: "Der Stand der Bewegung für Volksheilanstalten für unbemittelte Lungenkranke im Frühjahr 1896," Hygienische Rundschau, Nos. 13 and 14, 1896.

³ Thirty-fourth Annual Report of the Commissioners of Public Charities and Correction.

⁴ Obtained in answer to personal inquiry.

staff, they cannot be treated, but only kept, and are at the same time a constant menace to the other patients suffering from acute diseases. For the same expenditure a goodly number could be cured and centres of infection forever done away with. We all would be benefited in sanitary as well as social respects, could we give to the honest laborer above referred to the same chance (twenty-eight per cent.) of becoming again a well man, a bread-winner, and a supporter of his family. To attain this noble end let us create sanatoriums—create them soon and create them well.

349 WEST FIFTY-EIGHTH STREET.

